laid out with suitable paths about forty years ago by the late Ralph Sneyd, uncle to the present owner of the estate.

The idea in carrying out such work should be that of bringing the most picturesque portions of the wood into view, and the paths should be arranged accordingly. It would be contrary to the spirit of the thing to try and make the woodlands a kind of pleasure-ground, for the woods are capable of yielding effects perfectly distinct from those which may be obtained from a pleasure-ground. No great amount of planting need be done, but by this statement we do not mean that regard for a supposed principle need prevent one from planting decorative shrubs, trees, or bulbs in positions where suitable sites are available for them, and the effect can thereby be greatly improved. In many situations where close planting has caused trees to develop fine, straight stems or trunks, there is no need for any under-shrub to complete the scene, for the lover of trees will have his delight in viewing the magnificent stems, often devoid of branches for twenty, or even thirty, feet from the ground.

But it is necessary, for change of scene, that in some places there should be a dense undergrowth of an evergreen shrub, such as the rhododendron, which is capable of thriving and even flowering well in comparative shade. The author of the present work rightly insists on the necessity of obtaining rhododendrons on their own roots for woodland planting, as they are usually capable of succeeding better than grafted plants, especially if the grafts have been worked on stocks of *R. ponticum*. Many gardeners have the idea that the old and somewhat unattractive *R. ponticum* is the hardiest of all rhododendrons, but this is erroneous. Some of the North American kinds are much hardier, and their effect when in flower is brilliant. Mr. Robinson specially recommends a variety known as "Cunningham's White," a most hardy plant of vigorous constitution, and bearing flowers of a rosy-lilac colour in bud, gradually becoming paler as the flowers expand. Other suitable species for forming undergrowth of a similar nature would include *Berberis aquifolium* (the evergreen barberry), *Ligustrum ovalifolium* (common privet), *Laurus nobilis, Gaultheria Shallon,* species of Hedera (ivy), Bambusa species, also common briars, bracken and furze, &c.

When once the owner of a wood, however, determines to make it accessible and attractive, he will soon discover various ways in which the views from the paths may be improved without interfering with the character of the wood itself. The sides of the paths can easily be planted with attractive, low-growing shrubs, and the scope for securing spring effects from flowering bulbs will be almost infinite. The bulbs from the forcing houses need never be thrown away, for suitable situations for them will present themselves in numerous instances, and snowdrops, crocuses, bluebells, and even the cheery little cyclamens may be planted in thousands.

The author reproduces two chapters from "The English Flower Garden," and then in subsequent chapters goes on to deal with the evergreen and deciduous trees of the northern forest, the best of native and European trees for the British Isles, how to produce wood and covert from seeds, and many other details connected with the subject, there being in all thirty-three chapters. We cannot agree with the suggestion on p. 76 that trees growing in isolated positions on lawns have their roots robbed by the grasses! in anything like the measure that obtains when the trees are growing together in a plantation. Mr Robinson's plea for the use of English names in garden literature we regard as unfortunate, unless the botanical names are employed also, as the use of popular names alone usually leads to the greatest confusion.

WATER SUPPLY.

Clean Water and How to Get It. By Allen Hagen. Pp. x+178; illustrated. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1907.) Price 6*s*. 6*d*. net.

THERE is probably no engineering topic at the present day of more striking importance to the public welfare than that relating to the supply of pure water for domestic purposes to large centres of population. Health, physical fitness, comfort and general well-being are all bound up in the solution of a problem which becomes daily increasingly difficult, and, at the same time, increasingly urgent, with the rapid growth and development of manufacturing towns, quite apart from the consideration of its equally essential application to the smallest hamlet and to the individual. An age which no longer recognises disease and degeneration as the unalterable and inscrutable decrees of a mysterious Providence, but as evils to be resolutely combated, with every hope of a successful issue, cannot for one moment tolerate the idea of polluted sources and germ-ridden channels for its supplies of water—that element so indispensable to existence and so inseparable a constituent of nature itself.

Any publication, therefore, which tends to throw additional light on the subject, or which collates and classifies data and information already acquired for the use of those engaged in the prosecution of waterworks, must be readily welcome. Mr. Hagen's book belongs to the latter class, and his object has been to set down some useful facts and principles for the guidance of those who have had no previous experience in the matter, and yet who are called upon, in connection with civic and urban duties, to participate in the control and distribution of water for their respective districts. The book is avowedly not intended for the expert, though even he may find some serviceable data among its pages. It is for the beginner and the "man in the street," in order that they may thereby be led to understand and appreciate something of the rudiments of a science of such vital concern to themselves and their fellow citizens.

Written exclusively from an American standpoint and based entirely on American practice, it is difficult on this side of the Atlantic to offer very effective criticism of its contents. Conditions here differ in so many respects as to afford little scope for useful com-

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parison. Thus in this country we have no cases of towns corresponding to the Great Lake cities—Chicago, Cleveland, Buffalo, Detroit, Milwaukee and Duluth—drawing their water supplies from the same limited area into which their sewage is discharged. The risk of pollution is so abundantly evident that it is not surprising that Chicago has attempted to minimise the evil by diverting her sewage outfall, at considerable cost, into the Mississippi River. The wonder is that the example has not been copied in other cases.

Another strikingly distinctive feature is the enormous excess of supply *per caput* over that generally provided in this country. London and Liverpool are each content with less than forty gallons per head daily, whereas ten large American cities severally and individually exceed a demand of 100 gallons per head. New York takes 129 gallons; Boston, 151 gallons; Chicago, 190 gallons; and Pittsburg, 250 gallons. The discrepancy is tremendous. One feels that Mr. Hagen has hardly put it sufficiently strongly when he remarks that, " taking it right through, probably one-half the water supplied to American cities is wasted."

Mr. Hagen, in his book, first describes the various available sources of supply, viz. artificial reservoirs, small and large lakes, rivers, wells, and springs. He then discusses the chemical action of water on iron pipes and the means of effecting and maintaining the purification of stored water. There are chapters on pressure and on metering; the financial side of the subject is also considered. Altogether, the book is a most useful compendium of information relating to American methods of water supply.

VETERINARY PHYSIOLOGY.

A Manual of Veterinary Physiology. By Colonel F. Smith, C.B., C.M.G. Third edition, completely revised and in parts re-written. Pp. xvi+715. (London: Baillière, Tindall and Cox, 1907.) Price 15*s*. net.

AN interval of twelve years has passed between the issue of the last edition of this text-book and the present, third, edition. So many and notable have been the advances in physiology during that time that the book has had to be practically re-written; only the chapters on the senses, locomotion, and the foot stand nearly as they were. The chapter on the nervous system has been read, and some new matter added to it, by Prof. Sherrington, F.R.S., and other sections have been amplified by the cooperation of men who have special knowledge of the particular subject dealt with.

The book is not a text-book of human physiology with a little veterinary material added, but is a treatise which takes the horse as the type, and preserves that type throughout. Other animals of interest to the veterinary surgeon are not thereby excluded; the ox, sheep and pig, where differing essentially in their physiology from the horse, are fully considered. A special feature of the work is the interest it arouses in the reader; the physiology is applied to the practical requirements of the student and practitioner, and the book is, in its way, partly a clinical manual. An appendix to many of the chapters takes up shortly the more common features of pathological interest liable to occur in the organ or organs the physiology of which has just been considered. The addition of a little pathology is, in the words of the author, meant to enforce the lesson that pathology is only physiology out of health. It certainly adds greatly to the interest of the book, and serves to emphasise the importance of a thorough understanding of the normal.

For many of the discoveries in the physiology of the horse we are indebted to the researches of Colonel Smith himself, and no one is in a better position to unfold them. This he does in the simplest and clearest language; many of his statements, indeed, throw light on processes which go on in the human body, or are at least extremely suggestive. The observations, founded on universal experience, that, in order to get a horse fit for hard work, or cattle and sheep ready for the butcher, the diets given must be strongly nitrogenous and limited only by the appetite, are quite opposed to the recent theories so strongly advocated by Chittenden. This is not the only instance where theory and practice come into opposition; the custom of watering a horse before feeding it is physiologically correct, but, according to Ellenberger, a horse, in order to derive the fullest possible nutriment from its oats, should be given hay first, then water, and finally oats. This does not accord with the English views of watering and feeding horses, which, however, as Colonel Smith says, have stood the test of prolonged practical experience.

The chapter on digestion is particularly good; the horse, ox, pig, and dog are separately considered. Occasionally one meets with statements that require further amplification; that pilocarpine is antagonistic to atropin and produces a profuse flow of saliva reads as though pilocarpine overcomes the effects of atropin, and that nicotine paralyses ganglion cells is not quite exact. The text, however, bears evidence of careful revision, and the book will prove a most valuable one to veterinary students and practitioners. Recent discoveries have been generally incorporated. Special mention may be made of the chapter on generation and development, which are particularly well treated. The work is one that can be read with interest from beginning to end, and claims the attention of all interested in veterinary work.

PERCY T. HERRING.

OUR BOOK SHELF.

The Polarity of Matter. By Alex. Clark. Pp. vii+134; illustrated. (London and Edinburgh: Gall and Inglis, n.d.) Price 3*s*. 6*d*. net.

THIS book claims to be a trustworthy text-book for the student of physics, but we cannot recommend it in this respect. Very few of the statements of fact which it contains are correctly made; and the deductions from them are supported by little consistent proof. At least, these are the conclusions to which we have come after a genuine endeavour to understand the meaning of the book. At the present time, when there has been such a rush of new facts, there is abundance of room for a book of a speculative

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